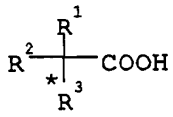
AMENDED CLAIMS FOR OZ49462 -PCT/EP99/07679

5. (amended) A vector comprising a nucleic acid sequence as claimed in claim 1 [or a nucleic acid construct as claimed in claim 4].

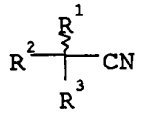
6. (amended) A microorganism comprising at least one nucleic acid sequence as claimed in claim 1 [or at least one nucleic acid construct as claimed in claim 4].

8. (amended) A process for preparing chiral carboxylic acids of the general formula I



(I),

which comprises converting racemic nitriles of the general formula II



(II)

in the presence of an amino acid sequence as claimed in claim 2 [or 3 or a growing, dormant or disrupted microorganism as claimed in claim 6 or 7], and where at least 25 mmol of nitrile are converted per h and per mg of protein, or 25 mmol of nitrile are converted per h and per g of dry weight, into the chiral carboxylic acids,

where the substituents and variables in the formulae I and II have the following meanings:

* an optically active center

R^1, R^2, R^3 independently of one another hydrogen, substituted or unsubstituted, branched or unbranched C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, substituted or unsubstituted aryl, hetaryl, OR^4 or NR^4R^5 and where the radicals R^1, R^2 and R^3 are always different,

R^4 hydrogen, substituted or unsubstituted, branched or unbranched C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, C_1–C_{10}-alkylcarbonyl, C_2–C_{10}-alkenylcarbonyl, aryl, arylcarbonyl, hetaryl or hetarylcarbonyl,

R^5 hydrogen, substituted or unsubstituted, branched or unbranched C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, aryl or hetaryl.

10. (amended) A process as claimed in claim 8 [or 9], wherein one of the substituents R^1, R^2 or R^3 is aryl.

AMENDED CLAIMS FOR 0Z49462-PCT/EP99/07679

11. (amended) A process as claimed in [any of claims 8 to 10] claim 8, wherein the process is carried out in an aqueous reaction solution at a pH between 4 and 11.

12. (amended) A process as claimed in [any of claims 8 to 11] claim 8, wherein from 0.01 to 10% by weight of nitrile or from 0.01 to 10% by weight of a corresponding aldehyde or ketone and from 0.01 to 10% by weight of hydrocyanic acid are reacted in the process.

13. (amended) A process as claimed in [any of claims 8 to 12] claim 8, wherein the process is carried out at a temperature between 0°C and 80°C.

14. (amended) A process as claimed in [any of claims 8 to 13] claim 8, wherein the chiral carboxylic acid is isolated from the reaction solution in yields of from 60 to 100% by extraction or crystallization or extraction and crystallization.

15. (amended) A process as claimed in [any of claims 8 to 14] claim 8, wherein the chiral carboxylic acid has an optical purity of at least 90%ee.

COPY OF CLEAN CLAIMS FOR OZ 49462-PCT/EP99/07679

1. An isolated nucleic acid sequence which codes for a polypeptide having nitrilase activity, selected from the group of:

   a) a nucleic acid sequence having the sequence depicted in SEQ ID NO: 1,

   b) nucleic acid sequences which are derived from the nucleic acid sequence depicted in SEQ ID NO: 1 as a result of the degeneracy of the genetic code,

   c) derivatives of the nucleic acid sequence depicted in SEQ ID NO: 1, which code for polypeptides having the amino acid sequences depicted in SEQ ID NO: 2 and have at least 95% homology at the amino acid level, with negligible reduction in the enzymatic action of the polypeptides.

2. An amino acid sequence encoded by a nucleic acid sequence as claimed in claim 1.

3. An amino acid sequence as claimed in claim 2, encoded by the sequence depicted in SEQ ID NO: 1.

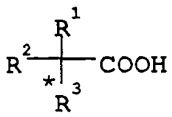
4. A nucleic acid construct comprising a nucleic acid sequence as claimed in claim 1, the nucleic acid sequence being linked to one or more regulatory signals.

5. A vector comprising a nucleic acid sequence as claimed in claim 1.

6. A microorganism comprising at least one nucleic acid sequence as claimed in claim 1.

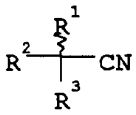
7. A microorganism as claimed in claim 6, where the microorganism is a bacterium of the genera Escherichia, Pseudomonas or Alcaligenes.

8. A process for preparing chiral carboxylic acids of the general formula I



(I),

which comprises converting racemic nitriles of the general formula II



(II)

in the presence of an amino acid sequence as claimed in claim 2, and where at least 25 mmol of nitrile are converted per h and per mg of protein, or 25 mmol of nitrile are converted per h and per g of dry weight, into the chiral carboxylic acids, where the substituents and variables in the formulae I and II have the following meanings:

* an optically active center

R^1, R^2, R^3 independently of one another hydrogen, substituted or unsubstituted, branched or unbranched C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, substituted or

unsubstituted aryl, hetaryl, OR^4 or NR^4R^5 and where the radicals R^1, R^2 and R^3 are always different,

R^4 hydrogen, substituted or unsubstituted, branched or unbranched C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, C_1–C_{10}-alkylcarbonyl, C_2–C_{10}-alkenylcarbonyl, aryl, arylcarbonyl, hetaryl or hetarylcarbonyl,

R^5 hydrogen, substituted or unsubstituted, branched or unbranched C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, aryl or hetaryl.

9. A process as claimed in claim 8, wherein one of the substituents R^1, R^2 or R^3 is OR^4.

10. A process as claimed in claim 8, wherein one of the substituents R^1, R^2 or R^3 is aryl.

11. A process as claimed in claim 8, wherein the process is carried out in an aqueous reaction solution at a pH between 4 and 11.

12. A process as claimed in claim 8, wherein from 0.01 to 10% by weight of nitrile or from 0.01 to 10% by weight of a corresponding aldehyde or ketone and from 0.01 to 10% by weight of hydrocyanic acid are reacted in the process.

13. A process as claimed in claim 8, wherein the process is carried out at a temperature between 0°C and 80°C.

14. A process as claimed in claim 8, wherein the chiral carboxylic acid is isolated from the reaction solution in yields of from 60 to 100% by extraction or crystallization or extraction and crystallization.

15. A process as claimed in claim 8, wherein the chiral carboxylic acid has an optical purity of at least 90%ee.